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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,672	04/03/2006	Eiichi Takahashi	283048US2PCT	2969
22850 7590 11/06/2007 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CONNOLLY, MARK A	
			ART UNIT 2115	PAPER NUMBER
			NOTIFICATION DATE 11/06/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/559,672

Applicant(s)

TAKAHASHI ET AL.

Examiner

Mark Connolly

Art Unit

2115

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-30 have been presented for examination.
2. The rejections are respectfully maintained and reproduced infra for applicant's convenience.

#### ***Terminal Disclaimer***

3. The terminal disclaimer filed on 9/4/07 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 6,658,581 and US Patent No. 6,993,672 has been reviewed and is accepted. The terminal disclaimer has been recorded.

#### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-10 and 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi<sup>1</sup> in view of Osborn<sup>2</sup> in view of Maskas<sup>3</sup>.
6. Referring to claim 1, Takahashi teaches the digital system that carries out digital processing in accordance with a single or a plurality of digital clock signals to perform a prescribed basic function, the digital system comprising:
  - a. a plurality of delay elements provided therein each comprising a circuit element that changes a delay time according to a value indicated by a control signal and is inserted in each of a plurality of clock circuits that supply the clock signals, and a plurality of holding circuits that hold a plurality of control signals applied to the plurality

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<sup>1</sup> As cited in the previous office action.

of delay elements, characterized in that the values of the plurality of control signals held by the plurality of holding circuits are changed by an external apparatus in accordance with a probabilistic search technique so that a basic function of the digital system satisfies prescribed specifications [fig. 1, ¶'s 0040, 0042 and claims 16 and 18].

Although Takahashi teaches the digital system for adjusting a delay time, it is not explicitly taught that the digital system is supplied with power from a variable output voltage power supply apparatus. Osborn teaches supplying a system with a variable voltage supply [col. 5 lines 9-18]. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the variable voltage supply into the Takahashi system because Osborn teaches that the performance of a device can be throttled back when its "maximum capacity" is not required thus conserving power.

Although the Takahashi-Osborn system teaches the digital system for adjusting a delay time and supplying the system with a variable voltage supply, it is not explicitly taught that the delay is adjusted in response to the system being supplied with the variable voltage supply. Maskas teaches that timing skew can be introduced when a system experiences varying voltage levels [col. 1 lines 42-45]. Because Takahashi is concerned with synchronous operation [¶ 0001] and because the Takahashi-Osborn system adjusts the voltage supplied to the system during operation, which Maskas suggests, "affect[s] clocking skew," it would have been obvious to one of ordinary skill in the art to correct the skew introduced when adjusting the voltage supply using the means taught by Takahashi because it would allow the system to maintain synchronous operation.

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<sup>2</sup> As cited in the previous office action.

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7. Referring to claims 2 and 3, Takahashi teaches the probabilistic search technique for adjusting the control signals is in accordance with a genetic algorithm or genetic programming [claims 2 and 3 and ¶'s 0021-0023].
8. Referring to claim 4, Maskas teaches that skew is introduced when voltage levels in the system vary [col. 1 lines 42-45]. Therefore, the Takahashi-Osborn-Maskas system would adjust the control signals to compensate for clock skew when the voltage level is adjusted in order to maintain synchronous operation.
9. Referring to claim 5, Osborn teaches providing a voltage to the system, which is less than a value designed for the system to operate at maximum capability [col. 5 lines 9-18]. The design value of the output voltage is interpreted as the output voltage required when operating at maximum capability. Therefore, the Takahashi-Osborn-Maskas system would adjust the control signals to compensate for clock skew associated when the voltage level is reduced below the design value in order to maintain synchronous operation.
10. Referring to claims 6-10, these are rejected on the same basis as set forth hereinabove.
11. Referring to claim 11, it is inherent that the Takahashi-Osborn-Maskas system comprises a power supply apparatus in order to provide operational power.
12. Referring to claim 12, Takahashi teaches the system being constituted as an integrated circuit [claim 9].
13. Referring to claim 13, Takahashi teaches the system being constituted as a circuit board [claim 11].

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<sup>3</sup> As cited in the previous office action.

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14. Referring to claims 14-26, these are rejected on the same basis as set forth hereinabove. Takahashi, Osborn and Maskas teach the system and therefore teach the method performed by the system.

15. Referring to claim 27, Takahashi teaches the external apparatus is equipped with a computer [¶0032].

16. Referring to claim 28, this is rejected on the same basis as set forth hereinabove.

17. Referring to claims 29-30, these are rejected on the same basis as set forth hereinabove. Takahashi, Osborn and Maskas teach the system and method and therefore teach the program performed by the method and system.

#### ***Response to Arguments***

18. Applicant's arguments filed 9/4/07 have been fully considered but they are not persuasive.

19. In the REMARKS, applicant argues in substance that Maskas does not teach or suggest changing values of a plurality of control signals used by a variety of holding circuits where the digital system's power supply comes from an output voltage supply complying with the probabilistic search technique and therefore the teachings of Takahashi, Osborn and Maskas differ in teachings from those of the present invention.

20. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The office action relied on Takahashi to teach the plurality of holding circuits and changing the values of the plurality of

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control signals used by the variety of holding circuits where the output voltage complies with a probabilistic search technique as shown above.

To reiterate the above rejection, Takahashi teaches the plurality of delay elements for changing a delay time and the plurality of holding circuits for holding control signals to be applied to the delay elements. Takahashi further teaches that the control signals are changed in accordance with a probabilistic search technique so that the system operates correctly.

Takahashi though, did not teach a variable voltage supply.

Osborn was introduced to teach a variable voltage supply and its benefits of throttling back the performance of a device by reducing the voltage when maximum performance is not needed in order to conserve power. Although the Takahashi-Osborn teaches adjusting a delay using a probabilistic search technique and reducing voltage to save power, there is no explicit teaching that the delay adjustment is in response to adjusting the voltage.

Maskas was merely introduced to teach that timing skew can result when a system experiences varying voltage levels. In other words, Maskas was relied upon to tie together the clock adjustment means taught by Takahashi with the voltage adjustment means taught by Osborn. Because Takahashi is concerned with synchronous operation and because the Takahashi-Osborn system adjusts the voltage supplied to the system during operation, which Maskas suggests, “affect[s] clocking skew,” the examiner made the argument that it would have been obvious to one of ordinary skill in the art to correct the skew introduced when adjusting the voltage supply using the means taught by Takahashi because it would allow the system to maintain synchronous operation.

### ***Conclusion***

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21. Applicant's amendment to claims 24-29 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Connolly whose telephone number is (571) 272-3666. The examiner can normally be reached on M-F 8AM-5PM (except every first Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on (571) 272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Connolly  
Examiner  
Art Unit 2115

mc  
October 28, 2007

A handwritten signature in black ink, appearing to be 'Mark Connolly', written in a cursive style.